

### **REMARKS**

Entry of the foregoing and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 1-28 were pending. By the present response, claim 20 has been amended to address typographical errors, claim 18 has been cancelled, and claim 29 has been added. Thus, upon entry of the present response, claims 1-17 and 19-29 remain pending and await further consideration on the merits.

Support for the foregoing amendments can be found, for example, in at least the following locations in the original disclosure: the original claims and the specification, page 3, line 17.

### ***ALLOWABLE SUBJECT MATTER***

Applicants note with appreciation the indication that claims 3, 6-10, 15 and 20-24 would be allowable if rewritten in independent form, including all the limitations of the base claim and any intervening claims, as noted in paragraph 14 of the Official Action. At this time, these claims have not been rewritten. Further, Applicants respectfully assert that the remaining claims are also allowable for at least the following reasons.

### ***CLAIM OBJECTIONS***

Claim 18 is objected to because of the noted informalities. Claim 18 has been canceled. Reconsideration and withdrawal of the objection is respectfully requested.

**CLAIM REJECTIONS UNDER 35 U.S.C. §112**

Claims 19 and 28 stand rejected under 35 U.S.C. §112, first paragraph, on the grounds set forth in paragraph 4 of the Official Action. This rejection is respectfully traversed. The specification recites at page 3, line 26 that the "average diameter of the rare earth phosphate particles is generally at most 200 nm."

Withdrawal of this rejection is respectfully requested.

Claims 20-23 stand rejected under 35 U.S.C. §112, second paragraph, on the grounds set forth in paragraph 6 of the Official Action. By the present response, applicants have amended claim 20 to reinsert the term "lanthanum" inadvertently deleted in the last amendment. Reconsideration and withdrawal of the rejection is respectfully requested.

**REPLY TO EXAMINER'S COMMENTS ON LAST ARGUMENTS**

With regards to the Examiner's comments beginning at paragraph 15 of the Official Action, applicants submit the following remarks:

Applicants respectfully disagree with the comments of the Examiner concerning the  $pK_a$  of nitric acid and alleged admissions regarding the same. Nitric acid has a  $pK_a$  value of -1.4, as shown in Table 8.1 of J. March, Advanced Organic Chemistry, 4<sup>th</sup> Ed., New York: John Wiley & Sons, Inc. (1992), pp. 248-253, a copy of which is attached for the convenience of the Examiner. Further, original claim 3 depended from claims 1 or 2 and recited that the acid is selected from a group that included nitric acid. Thus, when dependent from claim 1, nitric acid was included in the grouping, but when dependent from claim 2, nitric acid was not included in the grouping because it has a  $pK_a$  value of -1.4. Therefore, the original claims can be

read consistent with the published value of  $pK_a$  for nitric acid and consistent with the facts of record. Simply, there has been no admission as to the  $pK_a$  value of the nitric acid as alleged. In view of the original claim dependency and the above referenced text on organic chemistry, it is respectfully requested that the Examiner reconsider and withdraw the alleged admissions in this application.

**CLAIM REJECTIONS UNDER 35 U.S.C. §102**

Claims 14, 16-19 and 25-27 stand rejected under 35 U.S.C. §102(b) as being anticipated by Boakye et al., "Porous Aluminum Oxide and Lanthanum Phosphate Fiber Coatings" (hereafter "*Boakye et al.*") on the grounds set forth in paragraph 8 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The present application concerns a sol of a rare earth phosphate, the rare earth being cerium or lanthanum, more precisely an orthophosphate with formula  $LaPO_4$ , La designating the rare earth. This orthophosphate is hydrated and has a hexagonal structure. The present disclosure is, of course, applicable to mixed cerium and lanthanum phosphates  $(La,Ce)PO_4$ .

Claim 14, the only independent claim at issue here, recites that a sol comprises, *inter alia*, an aqueous phase, particles of a phosphate of one rare earth consisting of lanthanum, and an acid with a  $pK_a$  of at least 3, other than phosphoric acid, a lanthanum salt of which is soluble in water. The particles of phosphate are orthophosphates.

Of the cited documents, only *Boakye et al.* discloses a sol of lanthanum phosphate. *Boakye et al.* also discloses that the lanthanum phosphate is obtained

by peptization of a gel by nitric acid, which has a  $pK_a$  of -1.4 (See attached reference Table 8.1 of J. March, Advanced Organic Chemistry, 4<sup>th</sup> Ed., New York: John Wiley & Sons, Inc. (1992), pp. 248-253), which is less than 3. The resultant sol contains nitric acid, e.g., 40 g/l and 80 g/l (see end of second paragraph of page 54) and therefore is expected to have a  $pK_a$  corresponding to the nitric acid.

To anticipate a claim, the reference must teach all of the elements of the claim. See MPEP § 2131. Comparing the disclosure in *Boakye et al.* to the claims of the present application at issue here, the *Boakye et al.* document does not specifically mention using an acid with a  $pK_a$  of at least 3. In fact, *Boakye et al.* discloses using nitric acid with a  $pK_a$  of -1.4. In light of at least this difference, Applicants respectfully submit that an anticipatory rejection is improper since *Boakye et al.* does not disclose the invention as claimed.

To overcome this deficiency in *Boakye et al.*, the Examiner incorrectly relies upon the doctrine of inherency, and alleges that the pH would have been expected to have been inherent based on the buffering of the diammonium phosphate. See page 4, paragraph 8, of the Official Action dated June 29, 2004. However, the Examiner has clearly incorrectly applied the doctrine of inherency.

In order for a claimed element to be "inherent" in a prior art reference, the claimed element or feature must necessarily result from the prior art. "Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." and "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a

given set of circumstances is not sufficient." Continental Can Co., U.S.A. v. Monsanto Co., 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991) (emphasis added).

In other words, for the claimed pH to be inherent in *Boakye et al.*, every sol that could be used in the *Boakye et al.* reference must have the claimed pH. It is not sufficient that a sol that meets the description set forth in the *Boakye et al.* disclosure may have the claimed pH if one particular event is considered (in this case the alleged buffering action of diammonium phosphate). See, In re Rijckaert, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993). ("The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency.")

Even if, *arguendo*, a particular sol within the myriad sols disclosed in the teachings of *Boakye et al.* may have the same pH set forth in claim 14 of the present application, there is no reason based on the teachings of *Boakye et al.* that such a sol must necessarily have the claimed pH. Accordingly, the claimed pH is not inherent in *Boakye et al.* The rejection set forth by the Examiner is based on an incorrect application of the doctrine of inherency. Thus, the rejection must be withdrawn.

The rejection of the dependent claims also improperly apply the doctrine of inherency in relying on the disclosure in *Boakye et al.* and should be withdrawn for at least the same reason.

### ***CLAIM REJECTIONS UNDER 35 U.S.C. §103***

Claim 16 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Boakye et al.* on the grounds set forth in paragraph 11 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

*Boakye et al.* only discloses a sol of lanthanum phosphate. The sol is only disclosed as obtained by peptizing a gel with nitric acid, which has a  $pK_a$  of -1.4. In supporting the rejection of claim 16, in which the pH is recited as at least 4, the Examiner asserts that some variation in the pH is within the skill level of one having ordinary skill in the art.

However, such assertion does not satisfy the standard to establish a *prima facie* case of obviousness. As outlined in M.P.E.P. §§2143-2143.03, there are three basic criteria to establish a *prima facie* case of obviousness. First, there must be a suggestion or motivation to modify the reference or to combine the teachings. Second, there must be a reasonable expectation of success for the proposed modification or combination. Third, the references must teach or suggest all of the claim limitations. Here the rejection has failed to establish a suggestion or a motivation to modify the reference in the manner proposed. Accordingly, the rejection is improper and should be withdrawn.

As previously stated, *Boakye et al.* only discloses a sol of lanthanum phosphate. The sol is only disclosed as obtained by peptizing a gel with nitric acid, which has a  $pK_a$  of -1.4. As motivation to modify this teaching, the Examiner alleges that some variation in the pH is within the skill level of one having ordinary skill and recites that this would be advantageous to stabilize the compositions against solubilization at highly acidic environments and the complete conversion to hydrous oxides in highly alkaline environments.

However, such reasons are not part of the disclosure in *Boakye et al.* Thus, absent such motivation for the proposed modification, it is respectfully asserted that

a *prima facie* case of obviousness has not been established and the rejection should be withdrawn.

Moreover, it is clear that the stated motivation for modifying the teachings of *Boakye et al.* has not been derived from the prior art, but rather from the Applicants' own disclosure. Thus, the rejection is based upon impermissible hindsight and should be withdrawn for at least this further reason.

From the above, it is respectfully requested that the rejection be withdrawn.

Claims 1-2, 4-5, 11-13 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Boakye et al.* as applied to claims 14-17 above, and further in view of U.S. Patent No. 5,858,465 to Hunt et al. (hereafter "*Hunt et al.*") on the grounds set forth in paragraph 12 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

As noted above, the disclosure in *Boakye et al.* discloses a sol of lanthanum phosphate obtained by peptizing a gel with nitric acid, which has a  $pK_a$  of -1.4. The sol contains nitric acid, e.g., 40 g/l and 80 g/l (see end of second paragraph of page 54) and therefore is expected to have a  $pK_a$  corresponding to the nitric acid. *Hunt et al.* is relied upon for allegedly showing the use of lanthanum and/or cerium phosphates.

With regards to claim 1, Applicants note that *Hunt et al.* is directed to a combustion chemical vapor deposition (CCVD) method for treatment of substrates. *Hunt et al.* discloses deposition of non-oxide coatings using an open-ended flame enclosure tube with a fuel rich, oxygen poor mixture and a source of anionic nitrides

(col. 7, lines 19-27). The deposited coatings provide corrosion and refractory properties related to the phosphates (col. 7, lines 36-38).

The rejection of Applicants' claims as outlined in paragraph 12 of the Official Action is improper as an obviousness rejection because the rejection has failed to establish a *prima facie* case of obviousness. As outlined in M.P.E.P. §§2143-2143.03, there are three basic criteria to establish a *prima facie* case of obviousness. First, there must be a suggestion or motivation to modify the reference or to combine the teachings. Second, there must be a reasonable expectation of success for the proposed modification or combination. Third, the references must teach or suggest all of the claim limitations. Here, the rejection outlined in the Official Action does not meet the first and/or the second requirement. Accordingly, the rejection is improper and should be withdrawn.

The phosphates in *Boakye et al.* are in a sol; the phosphates in *Hunt et al.* are CCVD deposited in a coating, e.g., are in a solid product. There is simply no motivation to substitute the lanthanum of the solid product of *Hunt et al.* for the cerium in the sol of *Boakye et al.* Furthermore, there would be no expectation of success that a sol could even be formed using the substituted lanthanum because *Hunt et al.* does not make a sol but rather a solid CCVD deposit and does not suggest how to make a sol. Accordingly, a *prima facie* case of obviousness has not been established and withdrawal of the rejection is respectfully requested.

The above comments with regards to claim 1 apply equally to dependent claims 2, 4-5, 11-13 and 28. In addition, the following comments are offered.

With regards to claims 2 and 4, it is respectfully asserted that the proposed combination does not disclose, teach or suggest an acid with a  $pK_a$  of at least 3



(claim 2) or a pH of at least 4 (claim 4). As argued elsewhere herein, *Boakye et al.* does not expressly or inherently disclose, teach or suggest such features and the disclosure in *Hunt et al.* does not overcome this deficiency in *Boakye et al.* For at least this reason, the rejection of claim 2 and 4 should be withdrawn.

With regards to claim 5, the Examiner has noted in paragraph 8 of the Official Action that Figure 5a of *Boakye et al.* indicates that the coating thickness is less than the claimed maximum particle limitation. However, the only information that one can conclude from figure 5a of *Boakye et al.* is the length scale of one axis of the claimed elementary crystal size. There is no disclosure from figure 5a of *Boakye et al.* as to the length scales of both a thickness and a length. In other words, the coating thickness in figure 5a does not establish both a thickness and a length. At best, the coating thickness in figure 5a discloses one of a width or a thickness. Dimensions of the coating other than thickness are not ascertainable from figure 5a. For at least this reason, the proposed combination does not disclose, teach or suggest all of the claim 5 features and the rejection should be withdrawn.

With regard to claim 28, it is respectfully asserted that the coating thickness disclosed in figure 5a of *Boakye et al.* does not disclose, teach or suggest anything about the average particle size because the measurement of thickness does not provide complete information to make such a conclusion. For at least this reason, the proposed combination does not disclose, teach or suggest all of the claim 28 features and the rejection should be withdrawn.

Claims 12 and 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Boakye et al.*, as applied to claims 1-2, 4-5, 11-13, 14, 16-19 and 25-27 above, and further in view of U.S. Patent No. XP-002129788 to Shoji et al. (hereafter "*Shoji et al.*") on the grounds set forth in paragraph 13 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

As noted above, *Boakye et al.* discloses a sol of lanthanum phosphate obtained by peptizing a gel with nitric acid. *Shoji et al.* is relied upon in the rejection for the alleged disclosure of using sols as a vehicle for applying corrosion-inhibiting coatings of La and/or Ce phosphate to metal sheets, as cited in paragraph 13 of the Official Action.

A review of JP 11-061429 (IDS is enclosed) upon which XP-002129788 is based reveals that the materials disclosed in *Shoji et al.* are formed with phosphoric acid. See paragraph [0008] of *Shoji et al.* on page 3 of the translation. However, claim 1, from which claim 12 depends, and claim 14, from which claim 26 depends, both exclude phosphoric acid. Therefore, when considered as a whole, the *Shoji et al.* reference teaches the use of phosphoric acid and teaches away from Applicants' claims at issue here.

Further, there is no disclosure, teaching, or suggestion that would lead one of ordinary skill to select the Examiner referenced teachings from *Shoji et al.* over the above noted teaching away in *Shoji et al.*

From the above, it is respectfully submitted that a *prima facie* case of obviousness has not been established because the teaching away disclosure in *Shoji et al.* removes any motivation to combine the references to arrive at the features of the claims at issue here and/or results in a combination that does not

include all the features of claims 12 or 26. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

**CONCLUSION**

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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